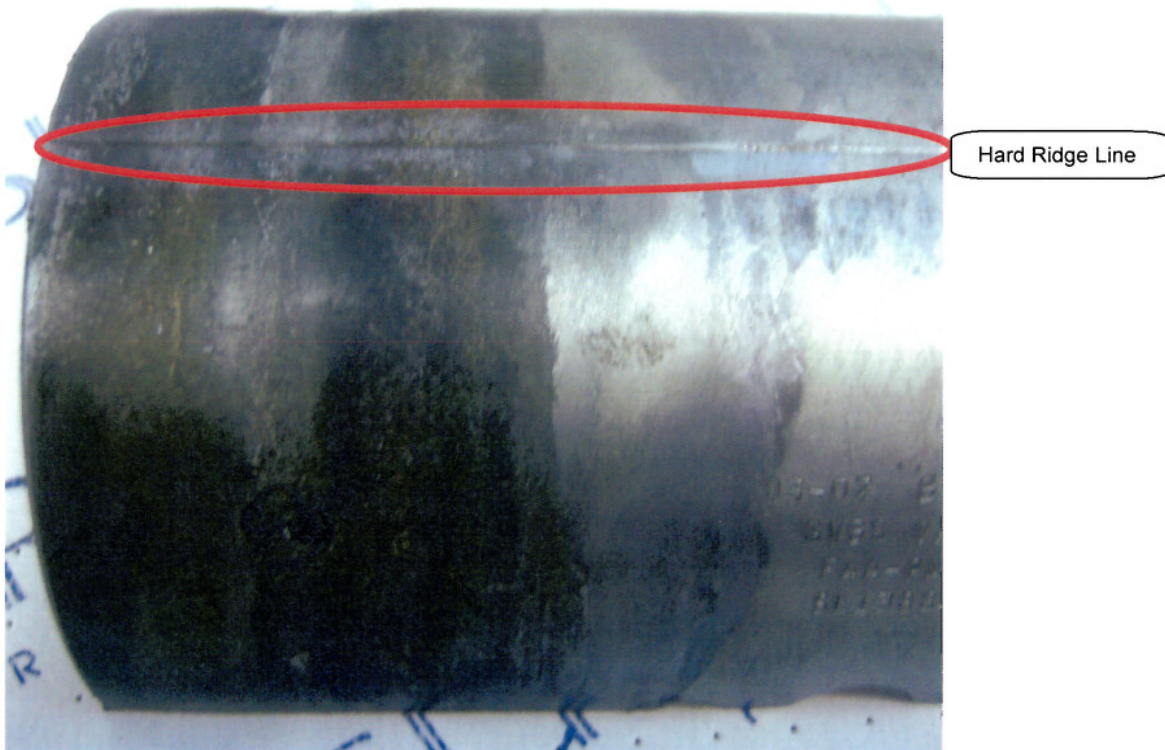
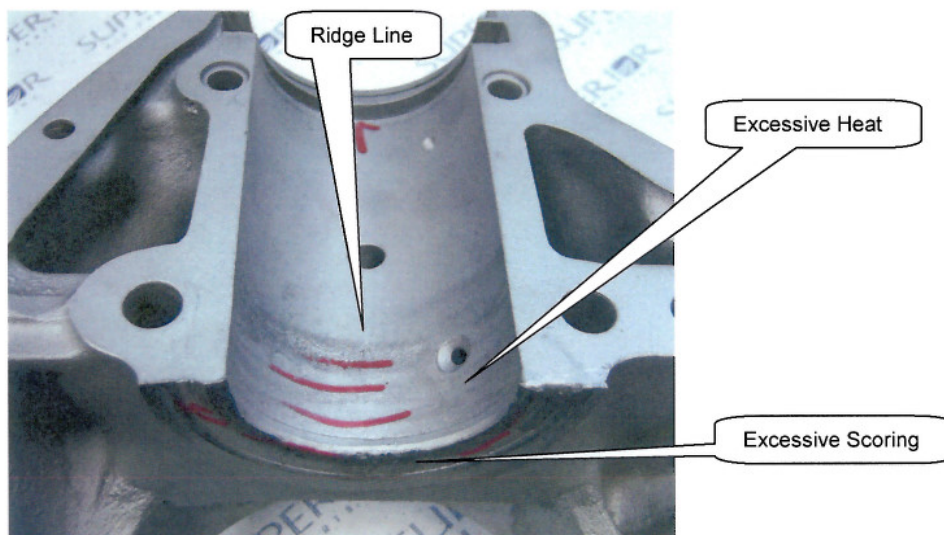
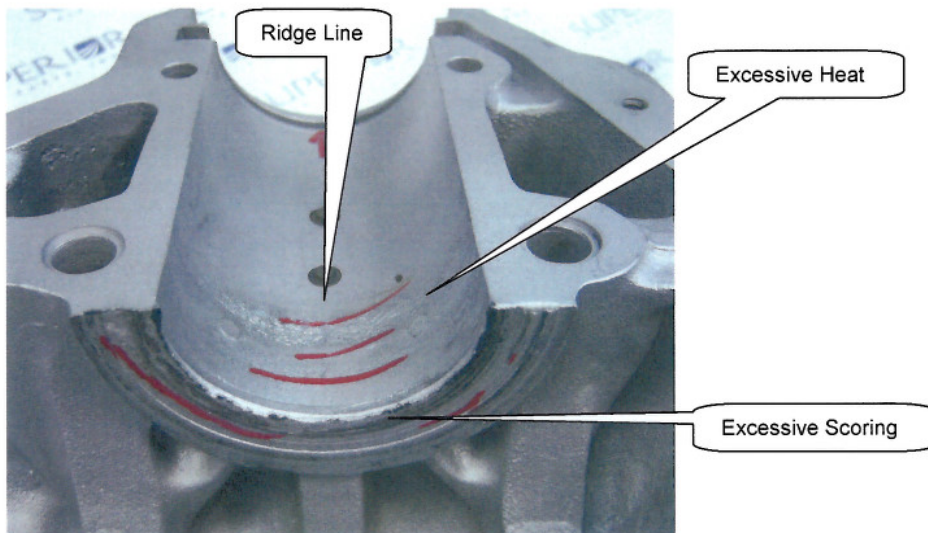


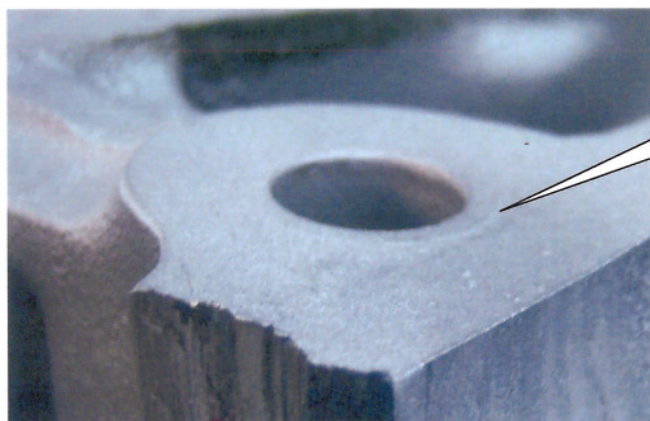
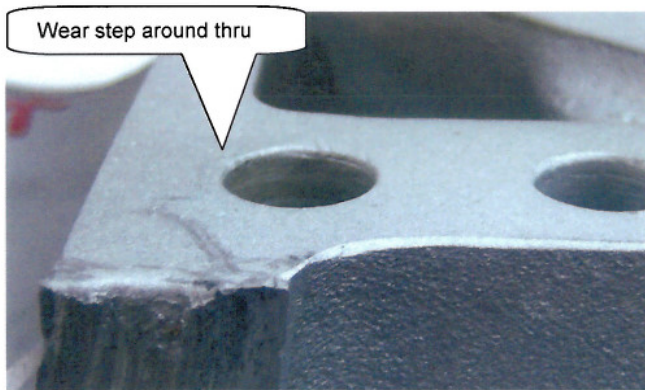
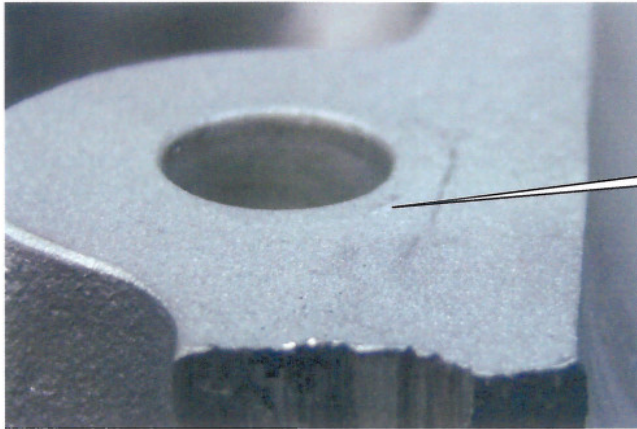
There are excessive heat indications on the outside of the rear third of the bearing.



The back of the bearing shell has a hard ridge protruding along its length in line with the crankcase parting surface. This ridge appears to get higher as it approaches the rear half of the bearing.



Both Crankcase halves show indications of excessive scoring on the thrust and anti-thrust bearing surfaces. Both crankcase halves show indications of excessive heat in the area where the rear third of the front main bearing is fitted. A ridge has formed in the crankcase at the rear edge of where the front main bearing is fitted. Also a ridge has formed in the crankcase in the area where the front main bearing parting surfaces touch each other. Oil supply passages to the front main bearing were checked and found to be clear.



There are indications around the thru-bolt holes in the area of the front main bearing that show a wear step has formed in the crankcase parting surface just outside the diameter of the sealing o-ring that fits around the thru bolt. These wear steps have been bead blasted which tends to blend them into the parting surface making them difficult to identify.

Conclusion: The crankshaft was found to comply with type design data at the undamaged areas. No material, processing, or dimensional deficiencies were found upon testing the key crankshaft characteristics.

Discussion: It appears that the oil flow to the rear of the front main bearing was not adequate enough to provide an oil film for complete separation between the crankshaft journal and the bearing.

1. Blockage of the oil supply passages could have caused this but there is no indication that the oil supply passages to this area of the front main bearing were blocked.
2. Improper running clearance between the crankshaft journal and the bearing could have also caused this. Insufficient running clearance in this area would prevent the proper amount of oil film to develop which is needed to support the crankshaft journal and prevent contact between the journal and the crankcase bearing. In addition, there would be insufficient oil flow out of the bearing area to help lubricate the thrust surface area.

The ridges that have formed on the bearing shell back and in the crankcase could have formed if the bearing bore hole in the crankcase was too small in the area where the front main bearing was fitted or if the crankcase parting mating surfaces around the thru bolts in that area were not flat or at the proper height. In either situation the bearing to the crankshaft running clearance could be reduced below the minimum running clearance limits when the thru bolts are torqued up to their proper limits.

Investigative Report

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